ченные результаты позволяют выбрать оптимальные условия обработки металлических образцов. Анодирование уже при 20 В достаточно для создания на поверхности образца гомогенного оксидного слоя Ta_2O_5.

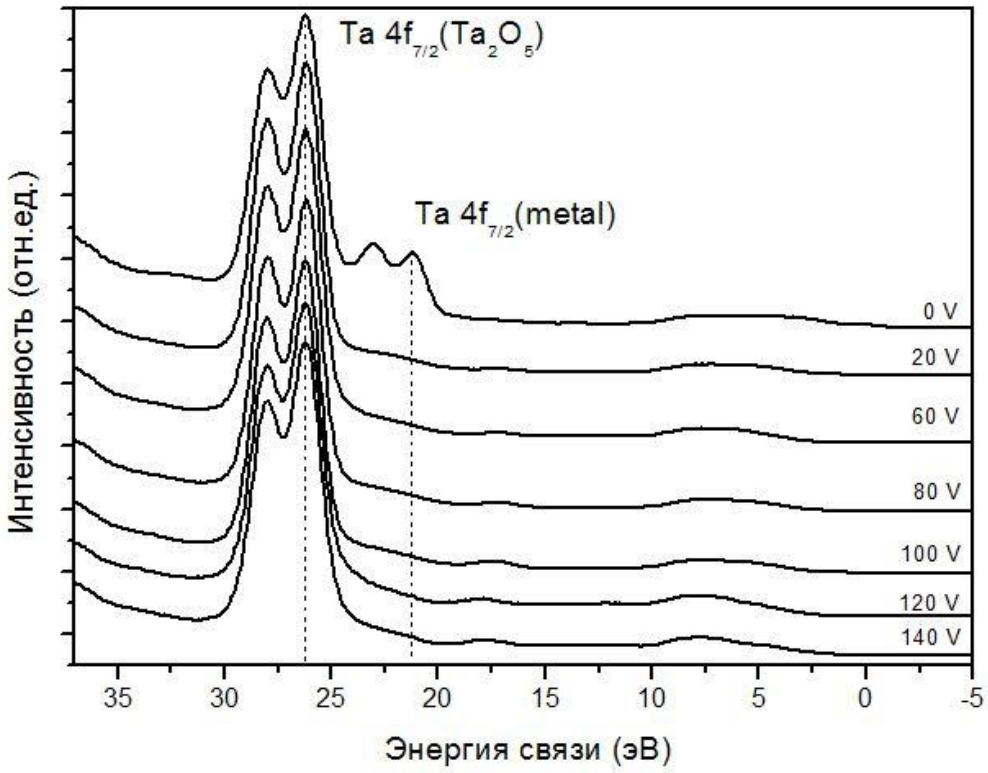

Рис. 1. Рентгеновские фотоэлектронные спектры образцов тантала.

Cu-CeO_2 NANOCOMPOSITES: MECHANOCHEMICAL SYNTHESIS, PHYSICO-CHEMICAL PROPERTIES, CO-PROX ACTIVITY

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Catalytic systems based on CuO-CeO_2 are widely used in different ecologically and commercially important processes: CO oxidation and NO reduction, water-gas shift reaction, methanol steam reforming, etc. Catalytic systems designated for preferential oxidation of CO in the presence of H_2 are prepared by ball milling of Cu and CeO_2, a simple and cheap one-step process to synthesize such catalysts.

Cu-CeO_2 nanocomposites were prepared by mechanochemical synthesis directly from Cu and CeO_2 powders and tested as catalysts of CO-preferential oxidation (CO-PROX) process. Catalytic activity of the samples was in good agreement with that of the other CuO-CeO_2 catalysts. It is found that after 60 minutes of milling, a mixture of 8 wt.% Cu-CeO_2 powders exhibits CO conversion of 96% and CO selectivity of ~65% at 438 K.

XPS data point to the presence of Cu^{1+}, Cu^{2+} and Ce^{3+} on the powder surface. The other important result of milling treatment is the appearance of two active oxygen states, which were tested in COTPR and H_2-TPR measurements.

Thus, CO oxidation was realized by two independent channels: low-temperature at 413 – 428 K and high-temperature at 453 – 463 K, respectively. The first oxygen state seems to be responsible for the catalytic process.

To conclude, ball milling has proven to be a successful, simple, and low-cost method to synthesize Cu-CeO_2 catalysts for preferential oxidation of CO in the presence of H_2.

ЦЕЛЕСООБРАЗНОСТЬ ЭЛЕКТРОШЛАКОВОГО ПЕРЕПЛАВА КАК АЛЬТЕРНАТИВЫ ДРУГИМ МЕТОДАМ УВЕЛИЧЕНИЯ СРОКА СЛУЖБЫ ДЕТАЛЕЙ, РАБОТАЮЩИХ В УСЛОВИЯХ СЕРОВОДОРОДНОЙ КОРРОЗИИ

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THE FEASIBILITY OF ELECTROSLAG REMELTING AS AN ALTERNATIVE TO OTHER METHODS OF INCREASING THE SERVICE LIFE OF PARTS OPERATING UNDER CONDITIONS OF HYDROGEN SULFIDE CORROSION

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One of the promising directions of development of Russian exports is oil and gas industry. The paper discusses ways to protect existing pipeline systems.

Одним из перспективных направлений развития российского экспорта является нефтегазовая промышленность. В работе рассмотрены существующие способы защиты трубопроводов.

Коррозионно-механические разрушения ограничивают заданный ресурс эксплуатации оборудования, контактирующего с агрессивными средами, если